MOTOROLA

Authorized Two-Way
Radio Dealer

305 East Albert Street
Portage WI 53901
May 23, 2006

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20544

In the Matter of

Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010	)	WT Docket No. 96-86

I. INTRODUCTION

Communications Service is company providing two-way radio service and sales to public safety agencies in south central and southwestern Wisconsin. Communications Service is the primary infrastructure and service provider under contract for the public safety radio communications systems for seven (7) rural and semi-rural counties in Wisconsin.

II. COMMENTS

A nationwide broadband interoperable public safety network in the 700 MHz band using a common technical standard would be of clear benefit to public safety. Communications Service does not oppose the use of part of the public safety 700 MHz spectrum for broadband service. However, broadband is not a practical solution for rural and semi-rural counties, for both technical and economic reasons.

Technical Limitations of Broadband Service

Broadband service by its very nature uses extremely wide bandwidth to transfer large amounts of data. Typically a minimum of 1.25 MHz of bandwidth is used. There is a direct correlation between bandwidth, data transfer rate, and range. Reliable data communications at high speed are typically limited to less than a mile. In a city or suburban environment, this technical limitation can be overcome by the inherent infrastructure availability in such areas.

In a rural or semi-rural environment, the implementation of a county-wide broadband network becomes impractical. A typical county in Wisconsin has an average size of about 700 square miles. Due to the physics of broadband communication, a deployment of 400 to 1000 or more broadband base stations would be needed for county-wide coverage. Placement of this many base stations becomes impractical, such as finding reasonable locations and data backhaul.

Wideband data systems solve this problem by using a compromise bandwidth between 50 KHz and 150 KHz. At this bandwidth, it is possible to achieve speeds of 128 kbps to 256 kbps using 5 to 10 base stations to cover a rural county – in most cases co-located with existing public safety infrastructure. Such a deployment is practical and cost-effective.

The commission proposes to remove the current wideband channels from the 700 MHz public safety band plan. Such an action would disenfranchise the rural and semi-rural counties of the United States, where county-side broadband systems are not practical.

Economic Barriers to the Rural Deployment of Broadband Service

If broadband was mandated as the only data solution for public safety, the infrastructure deployment costs are estimated at 5 to 20 times the cost of a wideband countywide solution. This increased cost becomes unaffordable for rural county governments. If a public/private partnership were formed for deployment of a 700 MHz broadband service, the deployment of rural areas would clearly be lowest in priority. In addition, the economics of deploying a broadband service in rural areas is poor, as any paid subscriber base is typically too small to recoup infrastructure investments. The very fact that cellular telephone coverage is not universal in rural areas after 25 years of commercial service is a case-in-point on the economic return of rural infrastructure deployments.

Interoperability between Broadband and Wideband Systems

The commission, in paragraph 53 of 47 CFR Part 27, states that the deployment of wideband and broadband solution would perpetuate a balkanization of public safety networks and technology. This presumption appears to be based on the conclusion that the deployment of a broadband and wideband system is identical. This is not the case, as broadband systems require 10 to 100 times the number of base stations. Indeed, by removing wideband options, rural and semi-rural counties will be removed from any practical solution of high-speed data.

Furthermore, balkanization as a metaphor implies a similarity to the interoperability problems of public safety voice systems, especially trunking. In the world of wireless data, such is not the case. It is common today for public safety data networks to have seamless interoperability between a stand-alone narrowband data network and a high-speed network such as a localized 801.11 wireless router. Connectivity is maintained to a single IP address across networks through background software solutions such as those offered by RadioIP and Cisco.

Proposed Solution

Communications Service requests the commission adopt a 700 MHz band plan similar to that proposed by the Region 22 (Minnesota) 700 MHz Public Safety Regional Planning Committee (attached), allocating both wideband and broadband channels. Indeed, rural and semi-rural areas do not need the full 6 MHz narrowband spectrum at 700 MHz. A solution that would allow regional planning committees to allocate some of the narrowband channels to wideband service in rural and semi-rural areas would also be acceptable.

III. CONCLUSION

In the United States, more than 2500 of the 3076 counties may be considered rural and semi-rural. For the benefit of the citizens of rural areas, Communications Service respectfully requests the commission provide the flexibility to retain wideband channel allocations in rural and semi-rural areas in the public safety 700 MHz spectrum.

Respectfully submitted,

Steven Dubberstein
General Manager and Engineer
Communications Service Inc.

steve@rfstore.com

attached: Minnesota Region 22 (Minnesota) 700 MHz Public Safety Regional Planning Committee draft plan for 700 MHz

COMMENTS OF THE REGION 22 (MINNESOTA) 700 MHz PUBLIC SAFETY REGIONAL PLANNING COMMITTEE

MAY 23, 2007

I. INTRODUCTION

At a special meeting held on May 22, 2007 in St. Paul, Minnesota, the Region 22 (Minnesota) Public Safety Regional Planning Committee (MN-RPC) passed a Resolution approving these comments regarding the above captioned matters addressed in the Report and Order and Further Notice of Proposed Rulemaking, FCC 07-72 (Further Notice), adopted by the Commission on April 25, 2007.

II. SUMMARY OF COMMENTS

The MN-RPC comments are primarily focused on recommending an enhanced hybrid band plan, "Broadband with Limited Wideband Flexibility Plan," that will support both a nationwide public safety broadband system and limited local flexibility to deploy wideband technology where it is needed. MN-RPC offers an example of a migration path from wideband to broadband in an urban area, along with specific interoperability strategies and tools to enhance the success of the nationwide broadband initiative. Further, MN-RPC offers comments of concern relating to the following specific statements contained in the Further Notice[1], particularly with respect to the harsh impacts to public safety agencies which have already committed to deploying wideband systems.

- "The Further Notice tentatively concludes to redesignate the wideband spectrum to broadband use that would be consistent with a nationwide interoperability standard, and to prohibit wideband operations on a going forward basis."
- "The Commission has issued no licenses for wideband channels."
- "Furthermore, although two special temporary authorizations (STAs) have been issued for

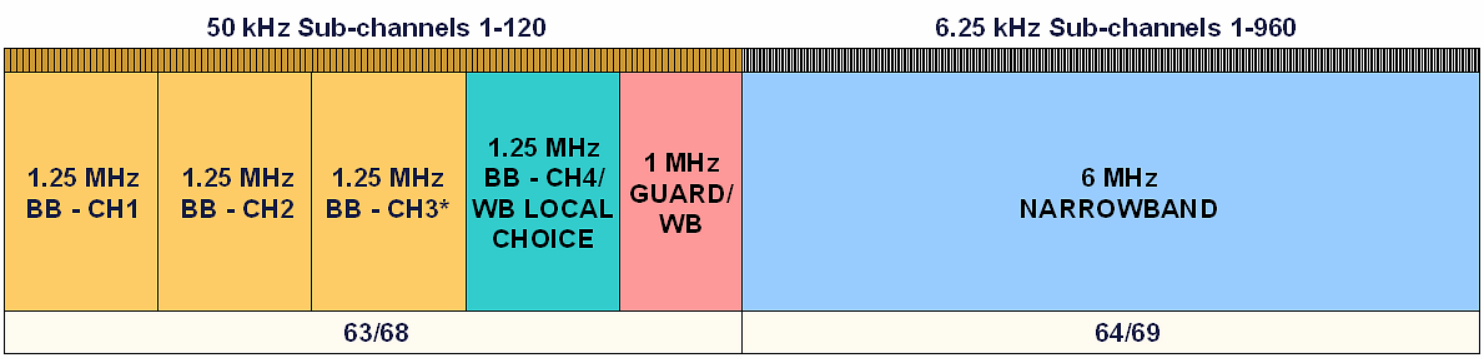
[1] Appendix D at 24 of FCC 07-72.

wideband operations, to the extent a public safety entity has constructed, deployed and is currently operating, as of the release date of the accompanying Report and Order, a wideband system pursuant to a grant of STA, and has reason to continue such operations beyond the current term of the STA, the Further Notice states that the Commission will work with such entity to extend such authority."

III. DISCUSSION

A. MN-RPC PROPOSES THE FOLLOWING "BROADBAND WITH LIMITED WIDEBAND FLEXIBILITY PLAN" FOR THE 700 MHZ PUBLIC SAFETY SPECTRUM ALLOCATION.

"BROADBAND / LIMITED WIDEBAND FLEXIBILITY PLAN"



Proposed usage & limitations:

- Broadband channels 1 – 4 and the 1 MHz internal guard band (12 MHz total – TV channels 63 & 68) channelized with 50 kHz sub-channels with aggregation permitted for wideband up to 150 kHz and broadband up to 5 MHz.
- Broadband channels 1 – 3 may only be used for new broadband systems conforming to the nationwide public safety broadband technology standard that are part of, or interfaced with, the new nationwide system.
- Broadband/ wideband flex channel 4 is a flexible wideband and/or broadband channel based on plans developed by the local 700 MHz Regional Planning Committee. Channel 4 may be used for either broadband systems conforming to the nationwide public safety broadband technology standard or for locally deployed wideband systems in a given geographic area.
- The 1 MHz internal guard band may also be used for wideband systems in addition to flex channel 4. Such use would be authorized on a secondary non-interference basis to adjacent operations outside the guard band.
- *Broadband channel 3 may be used on an interim basis only for existing grandfathered wideband systems[2] of sufficient size that cannot be accommodated entirely within flex channel 4 and the guard band. Such grandfathered use of broadband channel 3 would expire the latter of either January 1, 2012 or 90 days after implementation of the nationwide broadband system has occurred in the same geographic area served by the grandfathered wideband system and the nationwide broadband system requires the use of broadband channel 3 at that time.

[2] See section 6 of these comments for proposed definition of existing wideband systems.

The advantages of this band plan are many and include:

- A minimum of 3 and up to 4 – 1.25 MHz broadband channels may be aggregated together in the lower public safety segment to provide the needed dedicated spectrum for use in the nationwide broadband system.
- The 4th – 1.25 MHz broadband/ wideband flex channel at the upper end of the broadband segment, plus the adjoining 1 MHz internal guard band, could alternatively be used for local wideband system deployment which would serve immediate needs until the broadband system is implemented in a given area, and long term needs in remote areas where broadband may never reach. Since all 4 – 1.25 MHz channels will not be needed for broadband in all geographic areas until well into future, this approach permits more efficient use of the spectrum in a shorter time frame when and where needed.
- Existing and pending public safety investments in wideband solutions would be preserved, and high data rate systems would be within the reach of even rural public safety agencies in the short term, rather than at the end of a proposed 10 year build out schedule for the E block winner which may only reach 75% of the continental US landmass.
- This broadband/ limited wideband flex plan meets the goals of the Commission's vision on a forward looking basis while maintaining continuity with the regulatory development framework established over the past decade in this docket. Maintaining this regulatory development continuity with respect to wideband is critical to preserve public safety agencies' confidence in the Commission's decision making processes and public safety's willingness to move forward with ANY technology investments.
- This approach also avoids the potential complications with establishing a buyout/ reimbursement plan for incumbent wideband systems which have been deployed or are under construction.

B. 700 MHZ WIDEBAND TO BROADBAND MIGRATION EXAMPLE.

By advocating provisions for wideband and limited local flexibility, MN-RPC is not opposing broadband. To the contrary, numerous public safety agencies in the Twin Cities Metropolitan Area represented on the MN-RPC are actively planning for migration to the future public safety broadband network. The following steps are envisioned for such a migration in the Twin Cities:

- Deploy a wide area standards based (TIA-902) wideband data system serving the entire region (phase I completed, temporarily operating on 700 MHz – 25 kHz narrow band channels.)
- Upgrade the system to full 50 kHz operation and reprogram to wideband authorized channels (contracted for in June, 2008 – FCC wideband license applications based on the current band plan are currently in the pending status in ULS.)
- Monitor development of FCC service rules for the proposed E block, engage with the future auction winner to discuss build out strategies and timelines (mid to late 2008.)
- Participate in and monitor the national broadband standards setting process, system requirements definition, system oversight governance discussions, etc. (2007-2009.)
- Engage with public safety broadband construction entity regarding antenna site sharing agreements, backhaul networks, network interfaces, subscriber agreements, etc. (2008-2010.)
- Participate in system testing, coverage evaluation, commissioning and integration with local public safety systems (2011-2012.)

- Begin deploying subscriber units in the new public safety broadband system. Retain wideband system for reliability/ redundancy and for coverage into broadband coverage holes. (2012-2013, assuming the Twin Cities is in one of the earlier construction phases.)
- Consolidate the wideband system into flex channel 4 and/or the guard band segment as users migrate off the wideband system and capacity requirements diminish (2012-2013.)
- Reallocate flex channel 4 for broadband use for capacity enhancements as additional users populate the broadband system (2013-2014.)
- Once the broadband system is stable, metropolitan area broadband coverage deficiencies are resolved, and the wideband fleet has been fully migrated, the wideband system would be decommissioned and either relocated to rural areas where broadband has not yet reached, or the infrastructure hardware would be re-tasked into the region's P-25 voice system (2014-2016.)

C. ADDITIONAL STRATEGIES BEYOND A SINGLE NATIONWIDE BROADBAND SYSTEM FACILITATING DATA INTEROPERABILITY AND UNIVERSAL ACCESS.

While the vision of establishing a unified single nationwide broadband network as the centerpiece of achieving public safety interoperability is a worthy one, a single wireless network alone cannot achieve this desired outcome. Time and time again the notion of "build it and they will come" has proven out to be wishful thinking. The reality is that there are largely disparate operational needs, financial resources, terrain, population density, suitability and age of existing systems, and many other factors that result in a fragmented and heterogeneous set of user needs and resulting solutions. Many agencies will construct or retain independent systems for a variety of reasons. The interoperability solution for public safety wireless data is multifaceted and complex and needs to accommodate differing technologies and systems. While the nationwide network will meet many and perhaps most needs, strategies to bridge multiple technologies are required. In addition to the nationwide broadband transport network, some of these current strategies and tools will continue to be applicable:

- 4.9 GHz ad-hoc mesh type networks for localized, high intensity incident response including provisions for real time full motion video, robotics, advanced sensor information, etc.
- Wideband and narrow band data networks economically supporting graphics based applications over large geographic areas.
- Wideband modems/ radios with card slots for piggy backing a nationwide broadband modem.
- Hand held and mobile client devices (computers) with card slots for a nationwide broadband modem.
- Middleware/ mobile routers to enable automatic switching between multiple wireless devices including WiFi, mesh, wideband, PS broadband, commercial wireless, etc.
- Commonality at the application level with interoperability messaging servers.
- Data broker servers providing data exchange among different databases and applications.

The key point being that prohibiting wideband actually inhibits interoperability by excluding an important RF tool that can be used to provide data connectivity to people in areas that broadband does not reach.

D. COMMENTS OF CONCERN REGARDING SPECIFIC STATEMENTS CONTAINED IN THE FURTHER NOTICE.

"The Further Notice tentatively concludes to redesignate the wideband spectrum to broadband use

that would be consistent with a nationwide interoperability standard, and to prohibit wideband operations on a going forward basis."

- MN-RPC believes it is absolutely essential for Regional Planning Committees, which are best positioned to evaluate solutions for local first responder agencies while weighing competing needs for spectrum, to have a reasonable degree of flexibility to utilize wideband systems in order to meet critical public safety needs that are not met by the future broadband system.
- While much has been made of the potential future virtues of broadband technology, it remains to be demonstrated that wireless broadband, which requires a very dense infrastructure to achieve acceptable geographic coverage, is economically feasible in non-urban areas. In fact, the build out requirements proposed by Frontline would insure that it would be over a decade from now until only 75% of the continental US landmass is covered by their proposed broadband system[3]. Public safety agencies typically require between 95% to 97% area coverage throughout their service areas. Obviously a solution other than broadband is needed for the next 10 years and to fill in the remaining 25% even beyond that - and that solution is wideband.
- Wideband technologies can provide a very large geographic coverage footprint, with cell edge performance characteristics comparable to broadband, for a fraction of the infrastructure development costs compared to broadband. Unlike broadband, the spectrum, technology and funding is currently available to immediately deploy wideband systems. Such wideband systems could provide important services for public safety until such time that broadband is ready in a given area. Prohibiting wideband translates to prohibiting wireless data of any kind for much of rural America for perhaps as long as the next 10-12 years or longer.

"The Commission has issued no licenses for wideband channels."

- MN-RPC believes this statement, particularly when used as rationale to minimize potential impacts to public safety entities, is misleading because it fails to recognize the fact that numerous public safety agencies have been frustrated at their inability to receive license grants for wideband systems. The Further Notice failed to acknowledge that numerous wideband license applications and requests for Special Temporary Authorization have in fact been filed and are currently "pending" issuance in the Commission's Universal Licensing System. Comments filed by Dataradio observed that the Commission appears to have been holding such applications for wideband licenses in abeyance[4]. Failing to act on legitimately submitted wideband applications for well over a year in the absence of any authorized licensing freeze can hardly be used to demonstrate that there is no interest or value to public safety in wideband systems, or to imply that incumbent public safety entities do not exist and will therefore be unaffected.
- In Region 22 alone, no less than four wideband systems have been purchased and deployed over the past few months. Wideband license applications and/or STA requests are currently pending before the Commission from the Counties of Hennepin, Mower, Sherburne, Washington and the Metropolitan Emergency Services Board (a consortium of 8 counties.) An additional wideband license application is currently in process from Clay County.
- On December 22, 2006 the Counties of Hennepin and Washington and the Metropolitan Emergency Services Board withdrew an expedited request for temporary rule waivers regarding use of 50 kHz wideband data channels for a region-wide system, originally submitted

[3] Frontline comments at 24.
[4] Comments of Dataradio at 5, February 28, 2007 in WT docket 96-86.

on April 14, 2006 due to unacceptable delays (over 8 months) by the Commission in acting on the request[5]. The subject wideband system is now temporarily licensed and operating on 25 kHz narrowband 700 MHz channels. This system was purchased as a wideband system and is under contract to be upgraded to full 50 kHz wideband operation in June, 2008. Wideband license applications for this operational system, without waiver requests, were accepted by the Commission and placed into the "pending" queue prior to the issuance of the Further Notice. While the wording of the Further Notice would appear to treat this system as a narrowband system, it is in fact committed in contract as a TIA-902 wideband data system and should therefore be treated as an incumbent wideband system.

"Furthermore, although two special temporary authorizations (STAs) have been issued for wideband operations, to the extent a public safety entity has constructed, deployed and is currently operating, as of the release date of the accompanying Report and Order, a wideband system pursuant to a grant of STA, and has reason to continue such operations beyond the current term of the STA, the Further Notice states that the Commission will work with such entity to extend such authority."

- In the event the Commission decides against the compelling comments expressed by numerous public safety practitioners to retain local flexibility and ultimately prohibits wideband on a going forward basis, the MN-RPC urges the Commission to entitle public safety agencies which have constructed and deployed, as of the effective date of any new Rulemaking, a wideband system pursuant to either an STA or license application pending before the Commission, to either: (1) Issuance of station authorizations and be afforded a reasonable system life cycle up to ten years including expansion of those systems; or (2) Compensation to relocate or terminate public safety wideband operations by the proposed E block auction winner as part of the costs to implement the nationwide public safety broadband system. Such costs to buy out the relatively small number of wideband systems currently in operation or under construction would be small for the E block winner but substantial for each of the incumbent public safety entities which have purchased those systems.
- It would be grossly unfair and clearly contrary to the public interest for public safety entities which have proceeded in good faith with system planning, budgeting, design, procurement and implementation of 700 MHz wideband data systems based on existing FCC Rules, approved Regional Plans, and in alignment with the established regulatory development framework in this Docket prior to issuance of the 9th NPRM (including the FCC's prior tentative decision to establish TIA-902 as the wideband interoperability standard,) to now be preempted after the fact from operating those systems. In the case of the Twin Cities Metropolitan Area TIA-902 wideband system, over $8 million in public funds have been expended to implement this operational system, which is now in jeopardy due to the Commission's tentative conclusion to usurp existing approved 700 MHz Regional Plans, disregard incumbent wideband systems, and to effectively outlaw wideband systems.
- In addition, an issue exists whereby equipment manufacturers have substantial sunk costs in developing wideband products based upon the regulatory development framework and adopted FCC rules. Failing to address this issue would negatively impact public safety because: (1) It would serve as a strong disincentive for future partnerships between the public safety and manufacturer communities to move forward with public safety driven standards and product development such as TIA-102 (Project 25) and TIA-902 (Wideband Data); and (2) It could substantially extend product development schedules in order to minimize manufacturer risk.

[5] DA 07-423.

IV. CONCULUSION

The Region 22 (Minnesota) 700 MHz Public Safety Regional Planning Committee urges the Commission to expeditiously adopt the "Broadband with Limited Wideband Flexibility Plan," establish an aggressive retuning schedule for existing 700 MHz operations, and begin acting immediately on the backlog of wideband license applications pending before it.

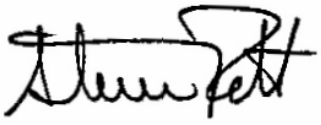
The "Broadband with Limited Wideband Flexibility Plan" put forth by MN-RPC represents a reasonable compromise balancing a future vision for broadband with the viability of today's wideband solution. Wideband technology fits a critical need for public safety data communications due to its immediate availability, geographically long reach and relative affordability compared to broadband. Wideband can be accommodated as a transitional technology without impairing the development of the proposed nationwide public safety broadband system.

Multiple land mobile radio manufacturers and public safety entities alike have invested substantial financial and personnel resources over the last 10 years developing wideband technologies, regional 700 MHz plans, and have begun to construct and operate 700 MHz wideband systems. These investments must not be simply washed away with a stroke of the regulatory pen if the Commission expects the manufacturer and public safety communities to continue investing in new technologies based on a well crafted and consistent regulatory development process. A sudden and disconnected turnabout with respect to permitting wideband operations and the related selection of TIA-902 as the wideband interoperability standard would not only frustrate public safety interoperability, but will act as a strong disincentive for future technology innovation and systems investment.

The Commission cannot lend a deaf ear to the substantial and overwhelming record of comments filed in this matter by public safety agencies and their associations to preserve a degree of local flexibility for wideband technologies in addition to new opportunities for broadband. The Commission needs to be responsive and strike a balance among competing interests by facilitating complimentary solutions that not only embrace innovation, but leverage the valuable efforts and investments made to date.

Respectfully Submitted,

Region 22 (Minnesota)
Public Safety Regional Planning Committee



Steve Pott, Chai**r**